

Water Use Goal:

- Develop and implement aggressive water management measures to increase freshwater availability to the Estuary.

Problem Statement

The rivers and streams of the Sacramento and San Joaquin watersheds carry approximately forty percent of the state's available freshwater. The Sacramento-San Joaquin Delta serves as the vital link between most of the state's available water supply and most of its demand. More than 7,000 diversions for purposes such as irrigation and drinking water storage reduce the annual volume of freshwater entering San Francisco Bay by more than one-half in dry and critically dry years. The federal Central Valley Project and the State Water Project are the two largest diverters, together removing several million acre-feet per year. Approximately eighty percent of this diverted water is used by agriculture, and twenty percent goes to urban, industrial, and other uses. Construction of currently planned local water development projects and the completion of the State Water Project will likely increase annual diversions from the Estuary water supply by at least 1.1 million acre-feet.

Freshwater inflow is a major determinant of environmental conditions in the Estuary. The volume and timing of freshwater inflow affect the Estuary's circulation and water quality; conditions for wildlife; production and survival of phytoplankton, zooplankton, and all life stages; and survival of aquatic species, including salmon, striped bass, longfin smelt, California bay shrimp, and starry flounder.

As the new century starts, additional water development is pending within the Estuary and in other parts of California. With the state's human population expected to increase from 36.5 million to 48 million by 2030, it is safe to assume that future demands on the Estuary's freshwater will be considerable. As reflected in the 2005 California Water Plan Update, growing urban areas will demand further freshwater supplies, and agricultural uses are likely to hold steady or decline. The amount of additional demand will depend on a number of important factors, including the success of urban water use efficiency programs. California is continuing to struggle to balance competing demands from the urban and agricultural communities with the need to protect the health of the Estuary ecosystem.

Achievements, 1993–2007

While the challenges are great, there have been some successes in the Estuary since the CCMP was adopted in 1993:

- Water use efficiency, especially for urban users, has become much more robust, and a wider variety of urban water conservation programs are being actively implemented. As indicated in the 2005 Water Plan Update and the 2006 CALFED Water Use Efficiency Comprehensive Evaluation, there continues to be strong potential to use water even more efficiently.
- Several water-recycling projects have been constructed and are operating.

- Per capita urban water use around the Bay Area has decreased.
- Groundwater banking, brackish water desalination, and a variety of other innovative approaches are occurring.
- Regional water interests are cooperating throughout the Estuary to plan for the future.

There have also been statewide efforts that complement the regional approach. In 2000, state and federal agencies adopted the CALFED Record of Decision that launched the CALFED program to improve water management and restore the environment. Accomplishments in restoring the environment can be found in many of the projects listed in other sections of the CCMP that have been funded through the CALFED Ecosystem Restoration Program. In addition, CALFED has implemented the Environmental Water Account (EWA), which is a program to purchase water for additional fishery needs in the Delta and its tributaries. The Environmental Water Account has gone through annual reviews, and its effectiveness is now being comprehensively reviewed.

To improve water management, a wide variety of water use efficiency, water recycling, watershed management, groundwater management, and desalination projects have been funded throughout the Estuary that have helped reduce demand and improve water quality.

Existing Management Structure

California's Constitution governs all water use in the state. It provides that all water within the state is the property of the people of California. However, while water remains a public asset, individuals may acquire an exclusive right to its use. The State Water Resources Control Board oversees the allocation of these rights and the protection of water for the people of California. Private rights are conferred to those who exercise physical control over surface water or groundwater, with the condition that the water be put to a reasonable and beneficial use. The State Water Resources Control Board administers water rights by issuing water permits. It retains authority to modify these permits to prevent unreasonable use of water. However, unlike diversions of surface water, there is no state-administered permit system for groundwater extraction except in adjudicated basins (groundwater basins) in which diversions are governed by the courts and carried out by an implementing entity approved by the courts.

The California Department of Water Resources and the U.S. Bureau of Reclamation provide water through contracts to local water entities, including water agencies, water districts, irrigation districts, mutual water companies, and joint powers authorities. The Department operates the State Water Project to supply water users in urban and agricultural communities. The Department provides dam safety and flood control services, assists local water districts in water management activities, including water conservation, and plans for future statewide water needs.

The U.S. Bureau of Reclamation develops water supplies for many uses, but primarily for agriculture, and ensures delivery of water through operation of the federal Central Valley Project. Furthermore, the Bureau holds water permits from the State Water Resources Control Board entitling it to store, divert, and deliver water to the Central Valley through the Central Valley Project. The State Water Project and the Central Valley Project, as appropriative rights holders, supply much of the state's agricultural irrigation water. However, appreciable amounts of irrigation water are supplied from groundwater pumping and local surface water.

The California Department of Water Resources' Office of Water Use Efficiency and Transfers has taken the lead to coordinate state, local, urban, and agricultural water conservation efforts. The State Legislature (AB 3616 Advisory Committee) and the Department of Water Resources are currently taking further steps to develop and implement agricultural water conservation practices. Water suppliers that contract with the U.S. Bureau of Reclamation (Central Valley Project) are required by the federal Reclamation Reform Act to prepare Water Conservation Plans and update those plans every five years.

Longstanding assistance in the wise use of soil, water, and related resources has been provided by the Natural Resources Conservation Service of the U.S. Department of Agriculture and the University of California Agriculture and Natural Resources Cooperative Extension. On a local and urban level, major credit for developing and implementing urban water conservation practices in California must be given to municipalities, water suppliers, and environmental organizations. They successfully created and implemented the document, "Memorandum of Understanding Regarding Urban Water Conservation in California" (MOU).

The urban water conservation MOU, conservation activities of the California Department of Water Resources and the U.S. Bureau of Reclamation, and other activities were incorporated into an overall water use efficiency framework as part of the CALFED Bay-Delta Program. While each program and entity retains its separate authorities and responsibilities, CALFED provides a focal point for additional funding for policy development and implementation. Water conservation has not remained stagnant. The California Urban Water Conservation Council has been an active and vibrant organization as it has worked to implement the MOU since it was signed in 1991. In 2005, a State Landscape Task Force was formed by legislation to develop additional proposals to gain additional water savings from urban landscapes. The Task Force's recommendations were sent to the Governor and Legislature at the end of 2005.

Regional Water Quality Control Boards address regionwide water quality concerns through the creation and triennial update of a Water Quality Control Plan (Basin Plan), which specifies beneficial uses of water, water quality objectives to protect uses, and schedules for achieving objectives.

The California Department of Health Services and local health and regulatory agencies are integrally involved in both development and operation of water reclamation projects.

Implementation of reclamation projects requires the involvement, approval, and support of a number of agencies, including state and local health departments, Regional Water Quality Control Boards, publicly owned treatment works (POTWs), water districts, and land use planning agencies.

The prospects for future reclamation projects are also dependent on effective coordination between reclamation agencies and land use planning agencies. For example, land use planning agencies can mandate the use of reclaimed water as a condition of development approval, and many reclamation ordinances in California require separate piping systems for drinking water and reclaimed water in new high-rise buildings and other new developments. Furthermore, due to public health considerations regarding reclaimed water use, the efforts of the State Water Resources Control Board, the California Department of Health Services, and county health departments must be also coordinated.

In short, no single agency or organization shapes or implements every aspect of water use management throughout the Estuary watershed. Instead, water use management is determined by networks of public and private water organizations and public interaction.

Recommended Approach

Aggressive water conservation measures should be developed and implemented statewide by users in agricultural, urban, and industrial communities. Urban communities have made great progress toward designing and implementing water conservation projects. One of the greatest achievements was the establishment of a memorandum of understanding addressing urban water conservation. Also, agricultural communities have employed conservation practices, most notably the concerted efforts of the farmers of the Imperial Irrigation District, Kern County Water Agency, and Westlands Water District. Some rural areas have installed state-of-the-art irrigation equipment and implemented bold water management practices. The California Department of Water Resources' Office of Water Conservation worked with the AB 3616 Advisory Committee to develop a list of "Efficient Water Management Practices" (EWMPs) and a strategy for implementing them. By providing funding to universities for research and pilot projects, government can foster further conservation of water used by agriculture.

A plan to increase water supplies and the efficiency of water use should include the utilization of reclaimed water to reduce:

- 1) The existing diversions of freshwater;
- 2) The demand for increased diversions; and
- 3) The existing discharge of wastewater directly into the Estuary.

Use of recycled water can be promoted by government on either a local or regional level. Many agencies throughout California, such as the Monterey County Water Resources Agency and the Monterey Water Pollution Control Agency, have implemented

ordinances. The Monterey County Water Resources Agency and the Monterey Water Pollution Control Agency are currently developing a project that will use reclaimed municipal wastewater for irrigating crops.

In areas throughout California that are free from groundwater contamination and have rights to surface water, arrangements can be made for the use of groundwater during years of below-normal runoff and for the use of surface water during wet years (i.e., conjunctive use). Surface water not diverted during dry years can remain in streams to be used for instream needs or other critical needs. In addition, groundwater basins with capacity to store additional water could be employed as water banks. Although the proposed Kern Water Bank did not get implemented as a State Water Project facility, it has turned out to be an important and active local water banking program. Similar programs have been developed, also within Kern County, by the Semitropic Water Storage District and Cawelo Water District. These two additional programs have been set up as partnerships with urban water agencies in other parts of the state, demonstrating that groundwater banking can work if the infrastructure and institutional relationships can be developed. In general, all three programs are able to accept water in wet years and wet months of all years, and extract water for use in dry months and dry years. Groundwater banking has provided an important degree of water supply reliability, particularly for water users who rely on water diversion from the Bay-Delta Estuary.

The legal and regulatory methods that could lead to the development of new water supplies and more efficient use of existing water supplies include pricing incentives, water-marketing arrangements, legal mechanisms for water transfers, water banking, and groundwater management.

Water Use Actions

Objective WU-1

Develop recycled water and the needed facilities to reuse water.

ACTION WU-1.1 (Revised 2007)

Water recycling feasibility studies should be completed by each publicly owned treatment works (POTW), municipality, and/or water district.

Who: Publicly owned treatment works, local governments, water districts, irrigation districts, State Water Resources Control Board, Regional Water Quality Control Boards, California Department of Health Services, California Department of Water Resources, and the U.S. Bureau of Reclamation

What: The studies should include:

- 1) The specific local uses of recycled water;
- 2) Present and potential quantity needs;